Shared Vision Planning for the Lake Ontario Regulation Study

USACE 2004 E&E Conference

April 14, 2004

Baltimore, MD

Satellite View of the Great Lakes

U.S. Army Corps of Engineers, Detroit District

Next three presentations

- I will talk about the planning and evaluation process
- Jon (Buffalo district) will focus on the development of benefit estimates for recreational boating
- Mark (Baltimore district) will look beyond evaluation to plan selection

How would you plan if there were no P&G?

- Imagine the P&G rescinded
- Or imagine PAS study in which you are asked to help a city plan its water supply future
- Or a reservoir operations study with Corps and non-Corps reservoirs where recreation or the environment was a big deal
- How would you plan?

Bill Lord on water studies

- *Bad water management often occurs when :*
  - *Facts are confused with values*
  - *Means are confused with ends, and*
  - *Technical judgments are made by citizens and politicians while value judgments are made by scientists and professionals*

A Modified Corps Planning Approach for a non-Corps Study

- IJC is not only not bound by the P&G, it's not bound by U.S. or Canadian law
- No NEPA, no ESA, no CWA
- So how does IJC make planning recommendations?
- Ontario-St. Lawrence Study Board chose shared vision planning

What is Shared Vision Planning?

- Updated version of well established planning principles
- Practical and effective public involvement approach
- Shared vision models

SVP Foundations: Planning Principles

- Planning approach grew out of the systems concepts applied by the Harvard Water Program
- P&S and P&G lent rigor to analysis but were designed to assess investments in new water projects
- But many water conflicts now are water management issues – drought, water quality, demand management – managed at several levels of government
- 1988 droughts in U.S. led to innovative adaptation of P&S to management

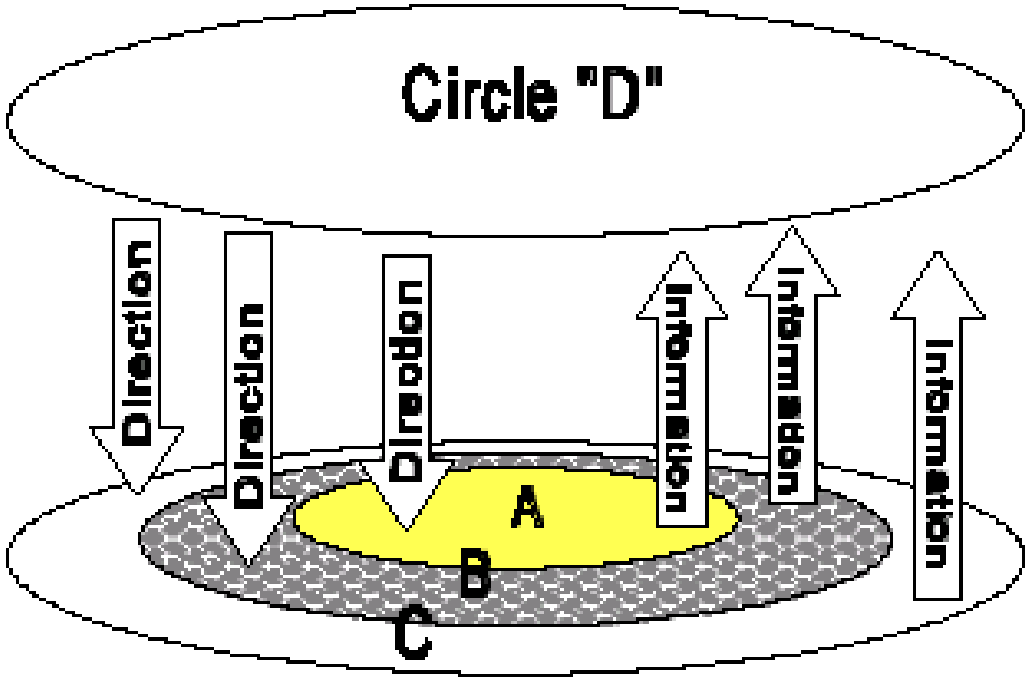
SVP Foundations: Planning Principles

Based on Time-Tested Planning Principles

1. ***Build a team*** and identify problems.
2. Develop objectives ***and metrics*** for evaluation
3. Describe the status quo; what will the future look like if we do nothing?
4. Formulate alternatives to the status quo.
5. Evaluate alternatives and develop study team recommendations.
6. ***Institutionalize*** the project or plan.
7. ***Exercise and update*** the project or plan (adaptive management).

SVP Foundations: Public Involvement

- "Circles of influence" concepts promote team building
- Concentric circles linked through existing networks – ***win the trust of the trusted***



Circle A – Model Building team

Circle B – Model Users, validaters

Circle C – All interested parties

Circle D – Political Decision

SVP foundations: Shared Vision Models

- SVMs are the tools that set shared vision planning apart from other “collaborative” processes.
- SVMs provide the technical rigor necessary in a successful planning process
- Do not replace traditional models, but dynamically link them to decision-making
- The distinguishing difference – these models are built collaboratively with stakeholders, experts and decision makers

History of SVP

- Water Supply for Washington DC area
  - Systems analysis and collaboration among utilities lead to acceptable reliability without any new mainstem dams on the Potomac
- Formalized through National Drought Study (1988-1994)
- Several U.S. and international cases since
- By name or not, the future of planning

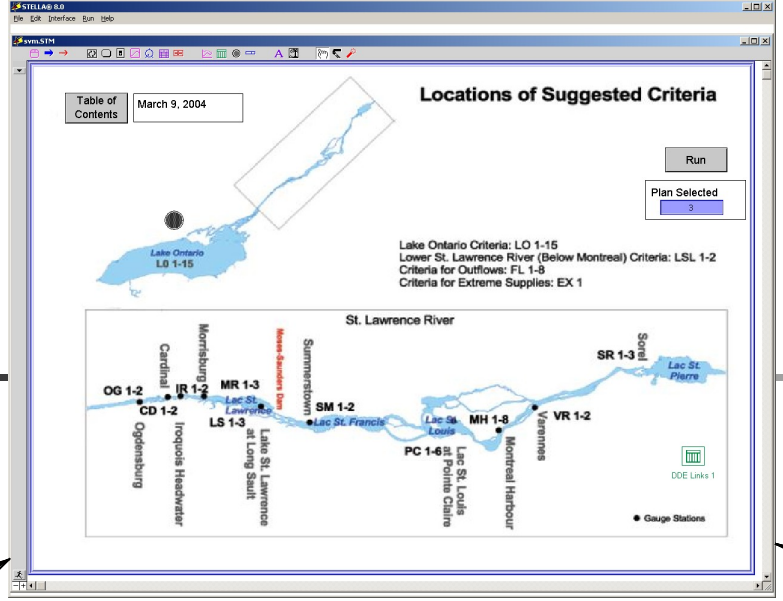
Shared Vision Planning for Lake Ontario regulation

- *Build a team* and identify problems.
  - Pursued iteratively with PIAG and TWGs and Study Board
- *Develop objectives and metrics for evaluation*
  - Hydrologic criteria and economic and evironmental performance indicators
- *Describe the status quo; what will the future look like if we do nothing?*
  - What will happen in the NEAR future with the current operating rules

Shared Vision Planning for Lake Ontario regulation

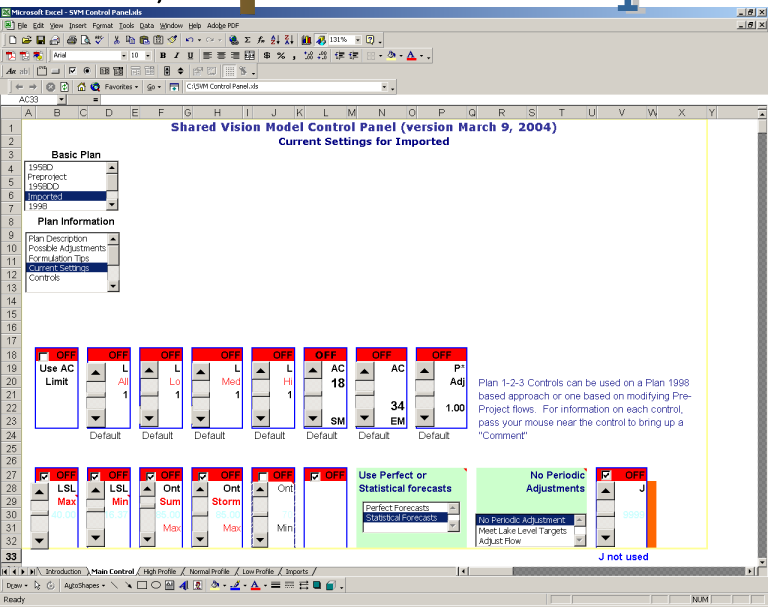
- *Formulate alternatives to the status quo.*
  - Intensive effort using several approaches and many members of the study team, including collaborations with environmental experts
- *Evaluate alternatives and develop study team recommendations.*
  - Shared vision model allows “instant” formulation and evaluation
- *Institutionalize the project or plan.*
  - Planners are working with operators
- *Exercise and update the project or plan (adaptive management).*
  - Plan for adaptation still being developed

STELLA Simulation

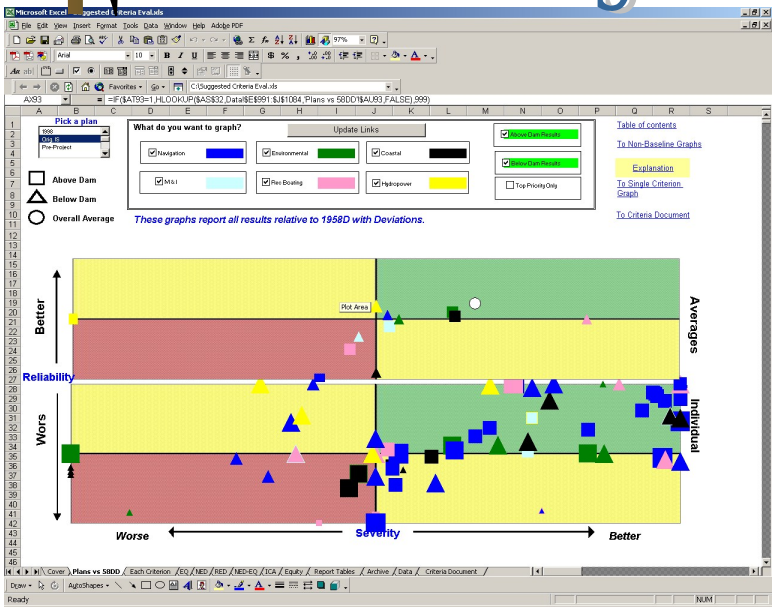


Model

Control Panel Input



Post Simulation Processing



Shared Vision Planning for Lake Ontario regulation

Recreational Boating

Hydropower

Commercial Navigation

Municipal and Industrial Water

Environment

Coastal

- **Covers personal and cruise ships**
- **Includes impacts to regional economy**
- **Big impact area in terms of dollars**
- **Competition with environment, coastal**
- **Within category competition**

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- **Value of energy produced**
- **Covers two locations, three plants**
- **PI's still taking shape**
- **What about carbon emission savings?**

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- **Traditional NED measure of reduced transportation costs**
- **Lower water costs because of light loading**
- **High water can cause velocity related costs**

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- **Very low probability, very high damage events**
- **High probability, very low damage events, but with high political exposure**

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- **After heated debate, no economic metrics**
- **Metrics include population changes, (implicit) habitat suitability and habitat area**

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Coastal

- **Erosion**
- **Flooding**
- **Beach Nourishment**

Shared Vision Model Outputs

- **Hydrographs**
- **Criteria test (reliability, resilience, vulnerability)**
- **NED**
- **RED**
- **EQ**
- **Equity**
- **Incremental Cost Analysis, including cost effective frontier**

STELLA® 8.0

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svm.STM

Ontario

Net AA RB Above Da... 0.0

Wet Year Adjustment Being Made

Dry Year Adjustment Being Made

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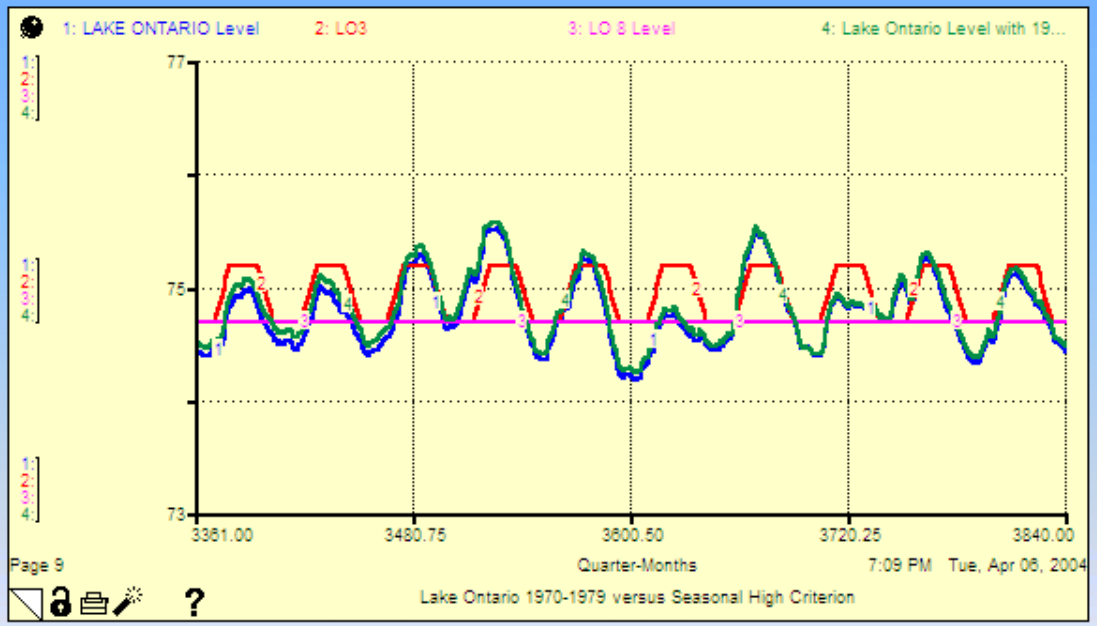
Table 1



Run Stop Restore Graphs/ Tables

Microsoft Excel - Suggested Criteria Eval

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Arial 14

B12 =CONCATENATE(X44,X45)

Pick a plan

Orig.IS
Pre-Project

Above Dam
Below Dam
Overall

What do you want to grap

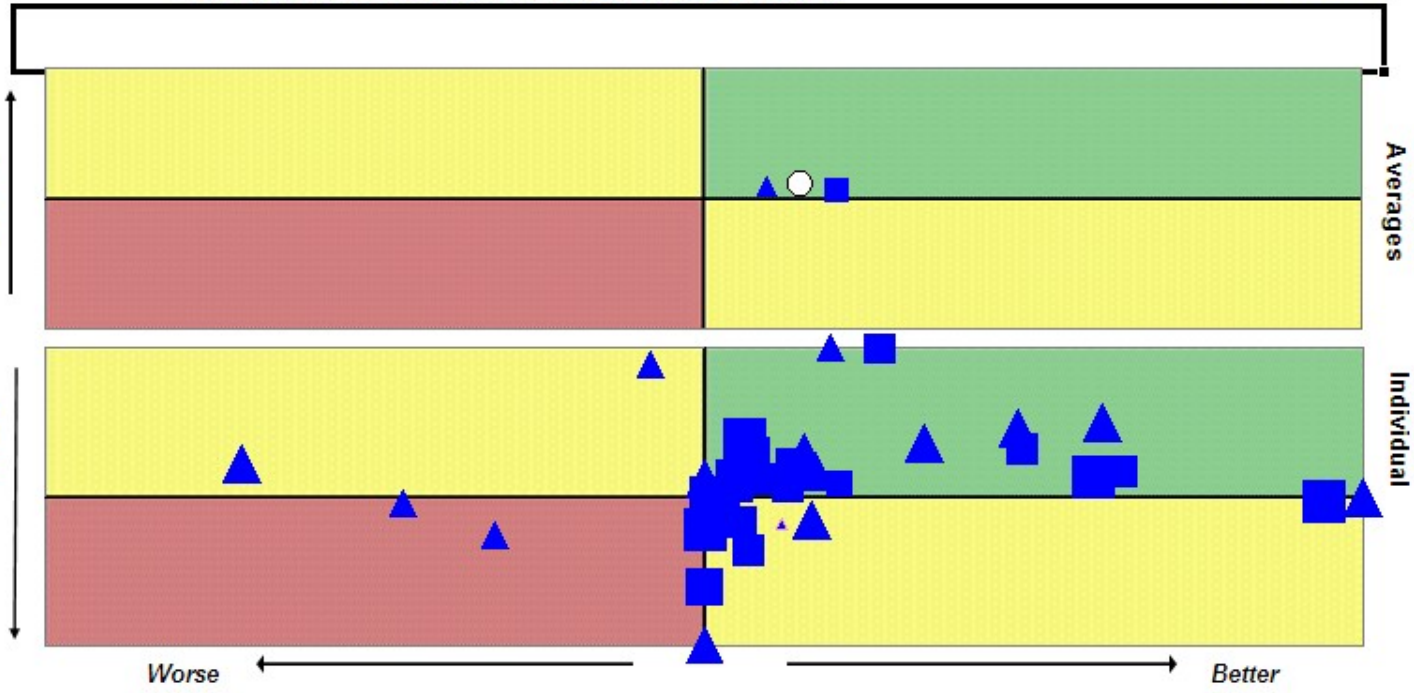
Update Links

Navigation
Environmental
Coastal
M&I
Rec Boating
Hydropower

Above Dam Results
Below Dam Results
Top Priority Only

Table of contents
To Non-Baseline Graphs
Explanation
To Single Criterion Graph
To Criteria Documen

These graphs report all results relative to 1958D with Deviations.



Cover | Plans vs 58DD | Each Criterion | Report Tables | Data | Archive | FL-9 | EQ | NED | RED | NED-EQ

Draw AutoShapes

Ready

NUM

Microsoft Excel - Suggested Criteria Eval

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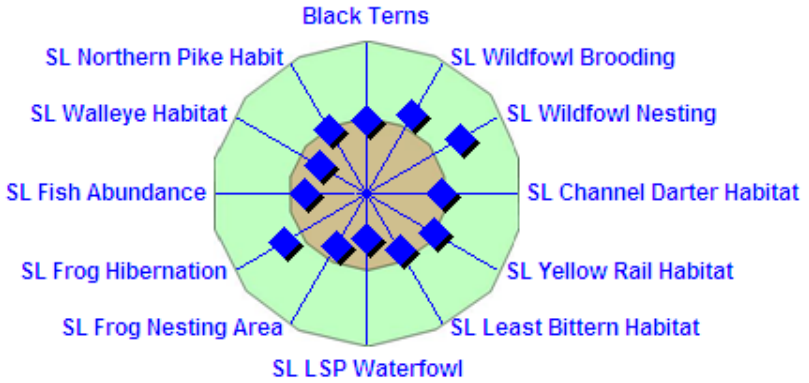
Radar diagram of EQ metrics

Graph Colors

Pick a plan

STELLA
1958D
1998
Orig. IS
Pre-Project
Doka-Minns
Lorie PP
IS 1 QM Perfect

The faint red inner circle indicates worse than 58DD, the outer green means better



Plan IS 1 QM Perfect ranks 8th out of 12 on average normalized EQ performance with a score of -0.01. Of the fourteen EQ metrics shown for IS 1 QM Perfect, 8 are worse than under the current regulation.

Cover | Plans vs 58DD | Each Criterion | Report Tables | Data | Archive | FL-9 | EQ | NED | RED | NED-EQ

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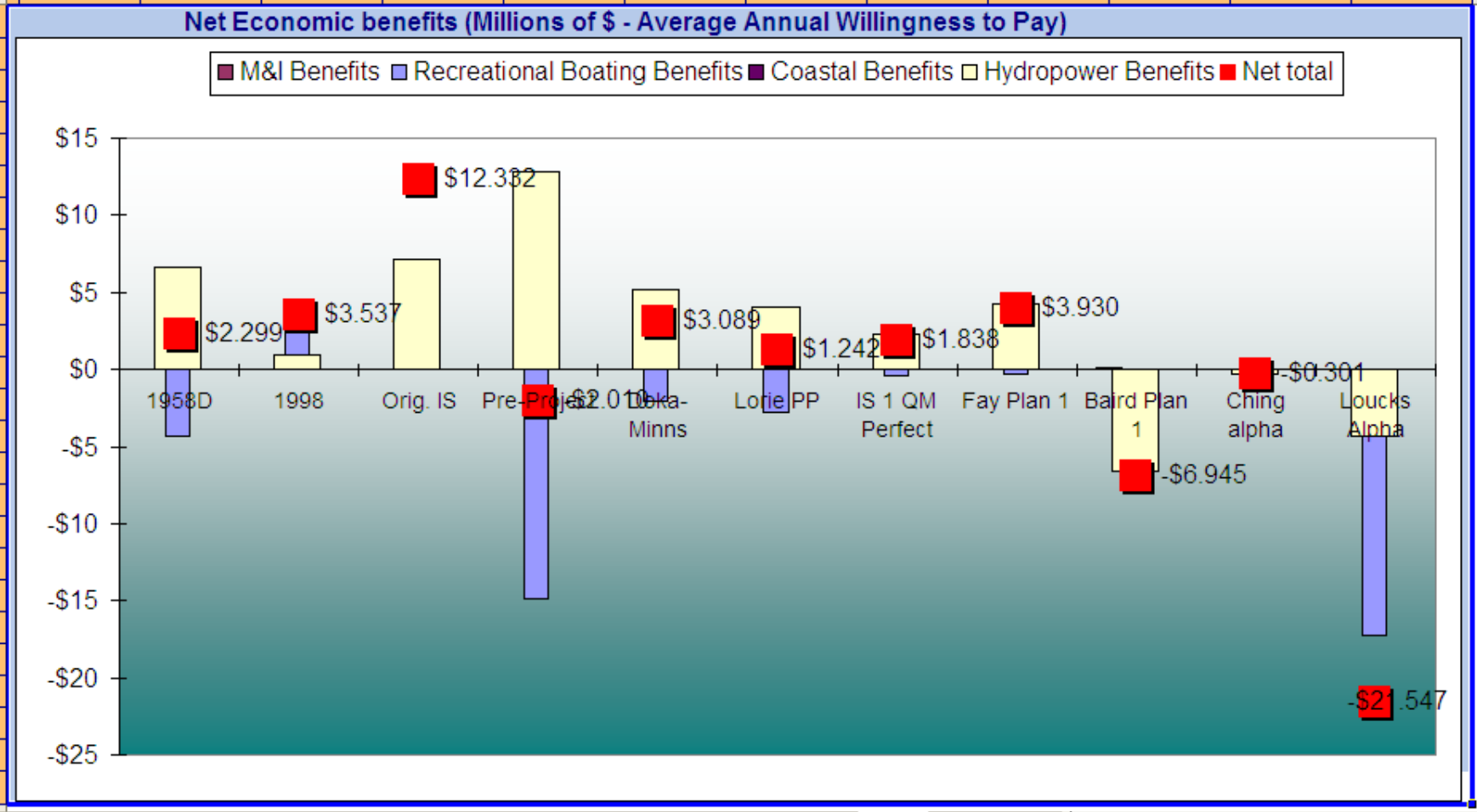

Cover | Plans vs 58DD | Each Criterion | Report Tables | Data | Archive | FL-9 | EQ | NED | RED | NED-EQ

Draw AutoShapes

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Microsoft Excel - Suggested Criteria Eval

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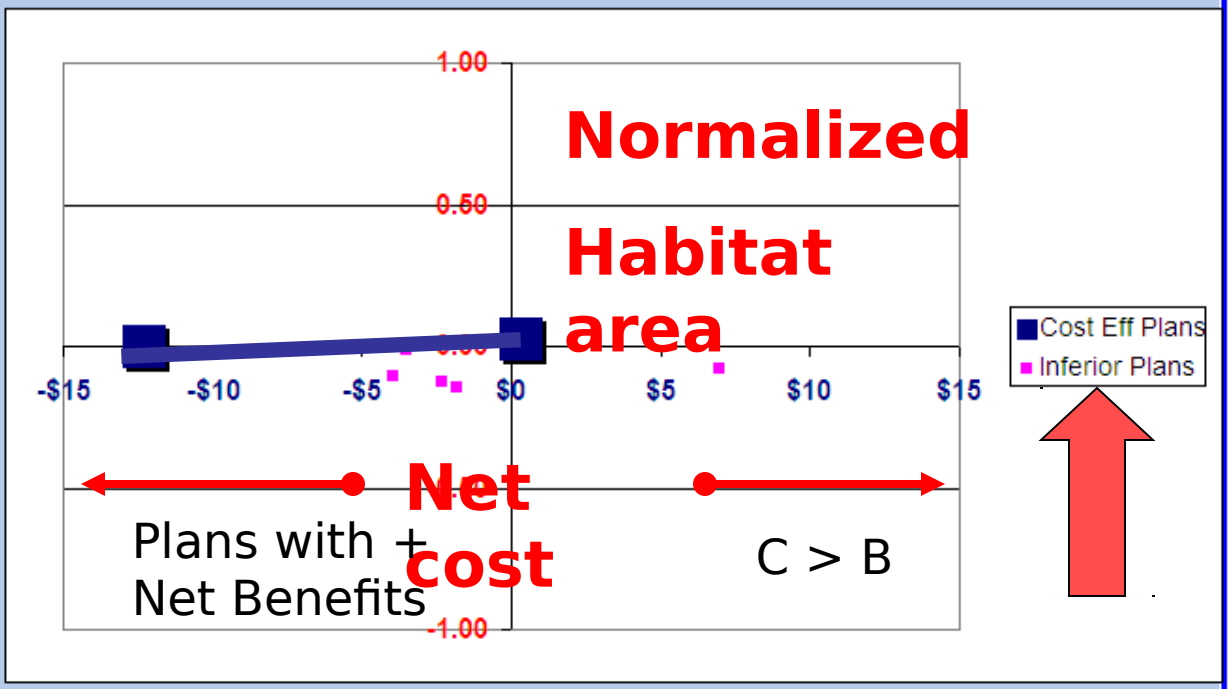
Average of all Normalized EQ Scores
Black Terns
SL Wildfowl Brooding
SL Wildfowl Nesting
SL Channel Darter Habitat
SL Yellow Rail Habitat
SL Least Bittern Habitat
SL LSP Waterfowl
SL Frog Nesting Area
SL Frog Hibernation
SL Fish Abundance
SL Walleye Habitat

Incremental Cost Analysis for SL Least Bittern Habitat

Y axis is normalized net change in SL Least Bittern Habitat

X axis is benefit (-$) or cost (i.e. disbenefit) of the plans

Cost Effective Plan	EQ	$
Plan 1c	0.03	$0.30
Plan 3a	0.00	-$12.33



Plans vs 58DD | Each Criterion | Report Tables | Data | Archive | FL-9 | EQ | NED | RED | NED-EQ | ICA

Draw AutoShapes

Ready

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Jon and Mark

- **Jon: How were recreational benefits conceived and estimated?**
- **Mark: Once the evaluations are done, who and how will the next regulation plan be selected from all the contenders?**